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WEST-MOS
Western Europe Sea Transport &
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2005-EU-90609-S-SINCOM

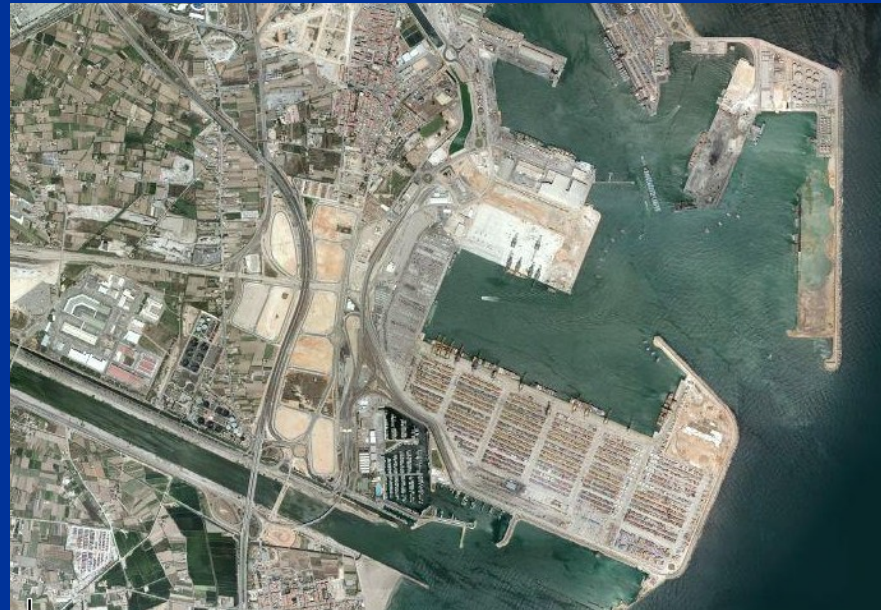


valenciaport
Autoridad Portuaria de Valencia

D 7.8 – VALIT PRACTICAL STUDY

MARKET STUDY AND COST BENEFIT ANALYSIS AT MICRO LEVEL

Port of Valencia in relation to Italy



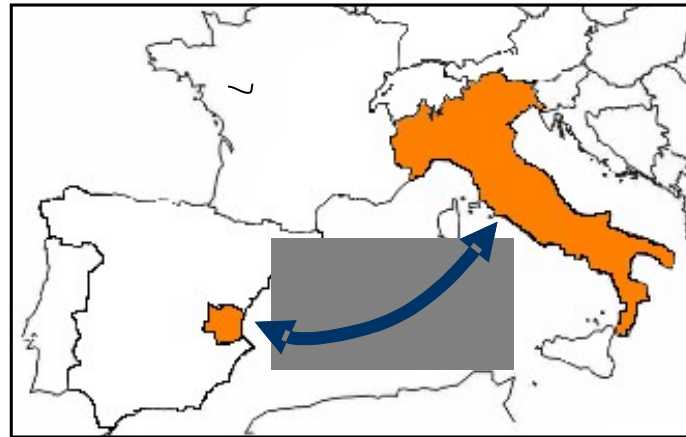
26 / 06 / 2008

Project co-funded by the European Commission within the trans-European networks budget (TEN-T)

FV
FUNDACIÓN
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WEST-MOS

Western Europe Sea Transport & Motorway of the Sea



FINANCIAL ANALYSIS OF A MOTORWAY OF THE SEA SERVICE BETWEEN VALENCIAPORT AND ITALY

26th June 2008



Project co-financed by the European Union from the Trans-European Networks (TEN) - area of transport infrastructures (TEN-T) budget. Directorate General for Energy & Transport. European Commission.



OBJECTIVES OF THE PROJECT

❑ Analyse the potential in terms of demand for the creation of a MoS service between Valenciaport and ports located on the Mediterranean façade of Italy;

❑ Estimate the financial viability of the project from the perspective of the various agents involved in the service: service operator (shipping company) and the user (transport companies).

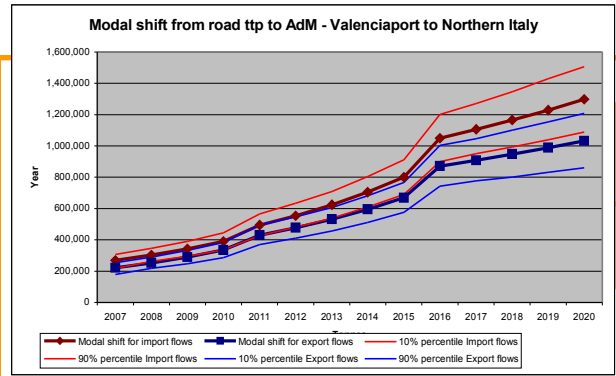
TIME SERIES ESTIMATIONS

HISTORICAL SERIES OF TRADE FLOWS

ROAD TRAFFIC FLOWS FORECAST

ESTIMATED MODAL SHIFT

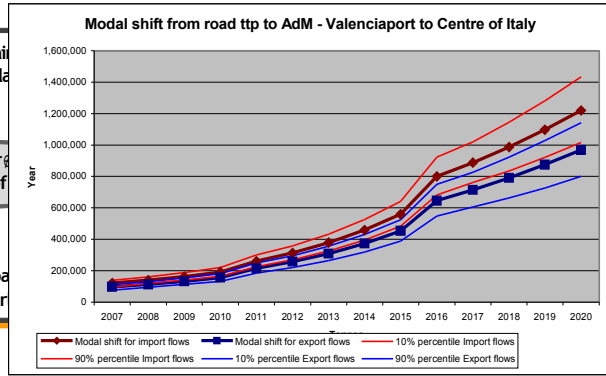
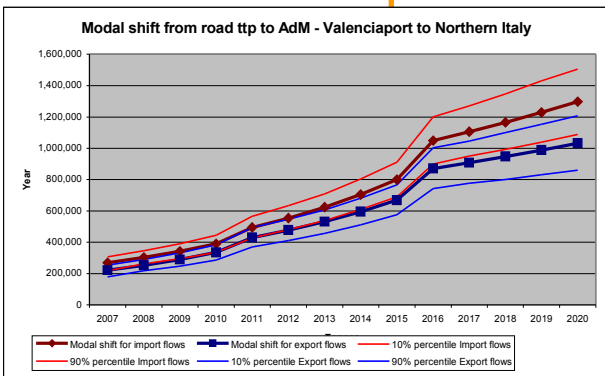
MOS POTENTIAL DEMAND



ENVIRONMENTAL & SOCIAL EFFICIENCY CRITERION

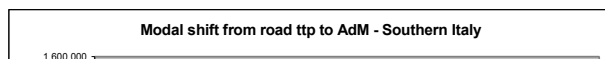
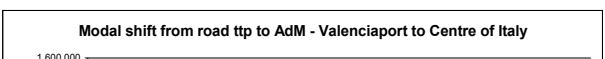
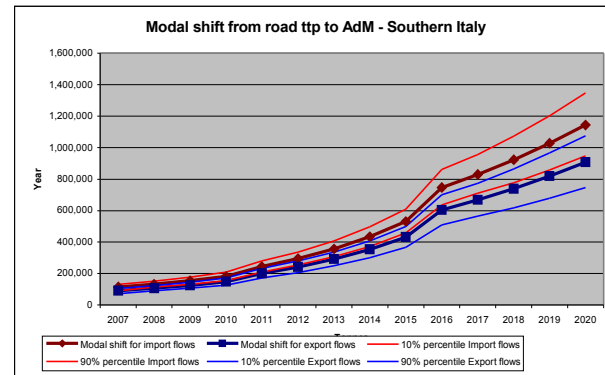
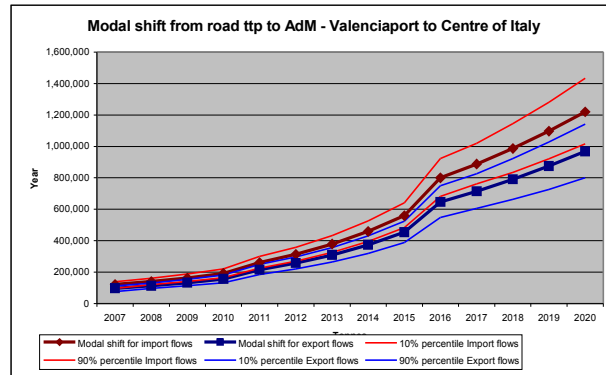
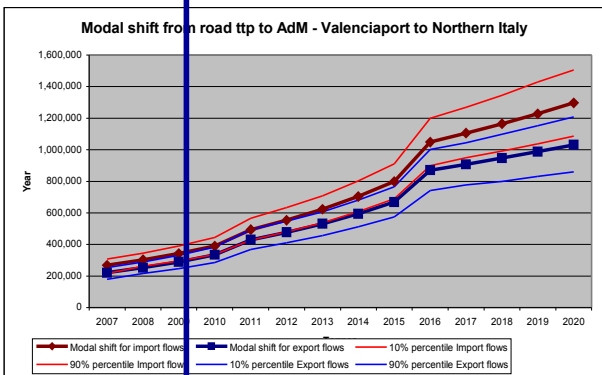
0,035 €/Tkm. (Truck icon)
0,009 €/Tkm. (Ship icon)

→ Marco Polo Externalities



90 out
64 out
36 out

O-D MATRIX
ENVIRONMENTAL & SOCIAL EFFICIENT ROUTES

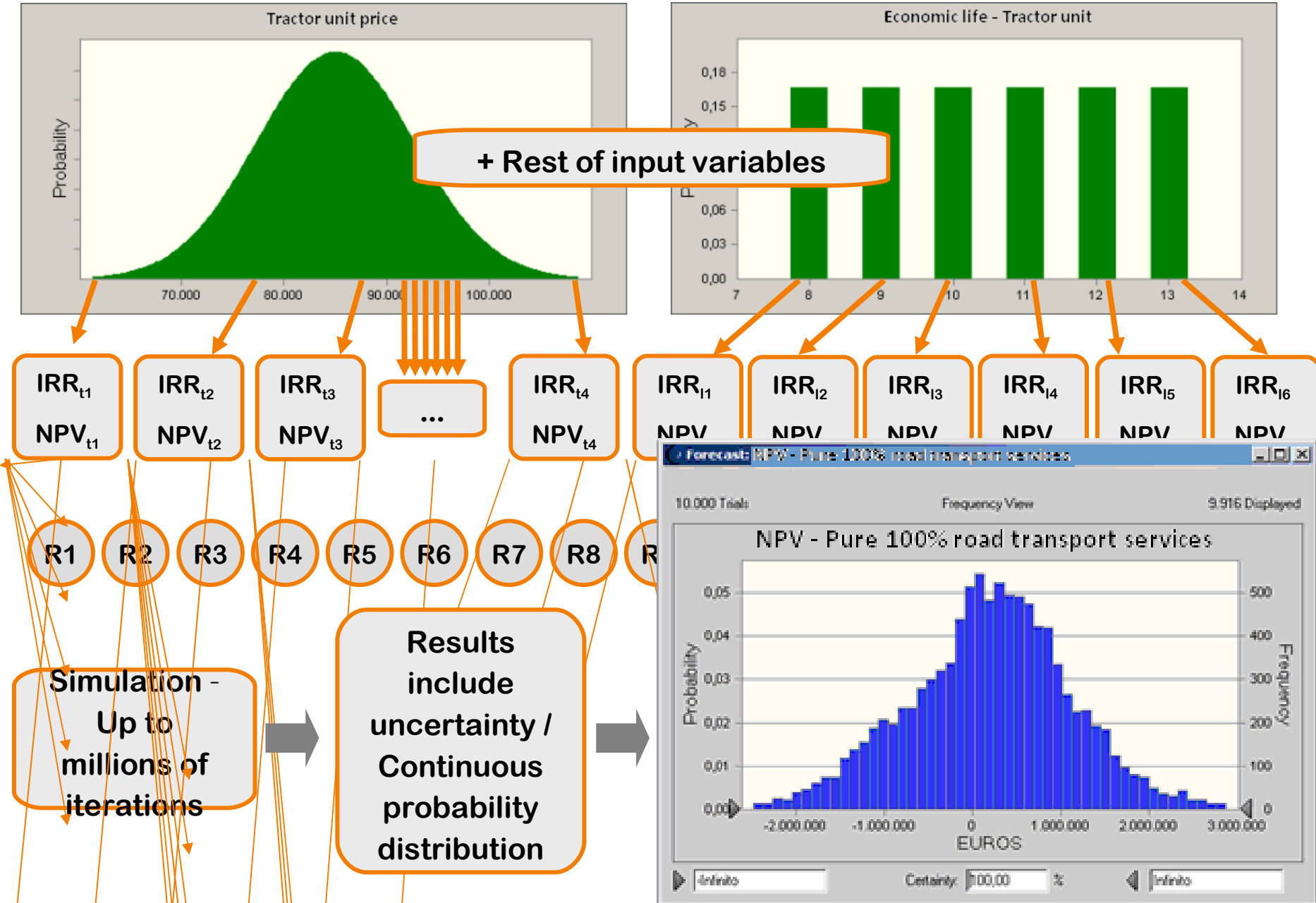


DEMAND FORECAST FOR MOS BETWEEN VALENCIAPORT AND ITALY (NORTH, CENTRE AND SOUTH)







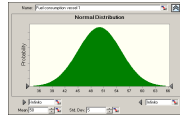
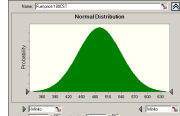
Financial indicators and sensitivity analysis

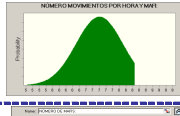

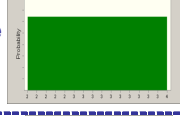
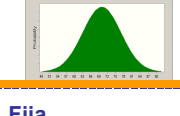

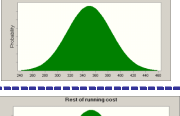
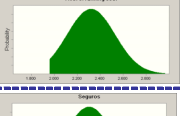
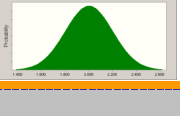
Modelling input variables



SHIPPING LINE FINANCIAL ANALYSIS



HIPÓTESIS:	Valor:	Tipo de variable:
Ratio conversión Tm/TIR:	20	Dist. Normal 
Alteración de los movimientos en vacío	5%	Dist. Normal 
Frecuencia de la línea:	4 salidas semanales	Fija
Tasa de descuento:	12%	Fija
Distancia trayecto (millas náuticas)	Norte: 527	Fija
	Centro: 572	
	Sur: 710	
BUQUE TIPO 1		
Vida útil del buque:	15	Dist. Uniforme entre 14 y 20 
Tipo de buque:	Ro-ro	Fija
Capacidad:	200 plataformas	Fija
Velocidad:	20 nudos	Fija
Precio de adquisición:	42 millones €	Dist. Normal 
Consumo:	50	Dist. Normal 
Tipo combustible:	180 CST	Fija
Precio combustible:	490 \$/Tn	Dist. Normal 

HIPÓTESIS:	Valor:	Tipo de variable:
Nº medio de movimientos por hora y mafi	7	Dist. Normal 
Nº medio de mafis en la carga y descarga del buque	3	Dist. Uniforme entre 1 y 6 
Tiempo medio empleado en la entrada, amarre, desamarre y salida del puerto	3	Dist. Uniforme entre 2 y 4 
Manipulación de plataforma en puerto	70 €/plataforma	Dist. Normal 
Fuel en puerto	1,5% del consumo habitual	Fija
Flete	700	Fija
Flete para vacíos	80%	Dist. Normal 
Resto de costes en puerto	350 €	Dist. Normal 
Resto de costes operativos	2320 €/día	Dist. Normal 
Seguros	2000 €/día	Dist. Normal 
TASAS DE ACTUALIZACIÓN DE PRECIOS		
Adquisición de buques	6%	Fija
Precio del combustible	5%	Fija
Tasas portuarias	1%	Fija
Tasa de inflación	3%	Fija

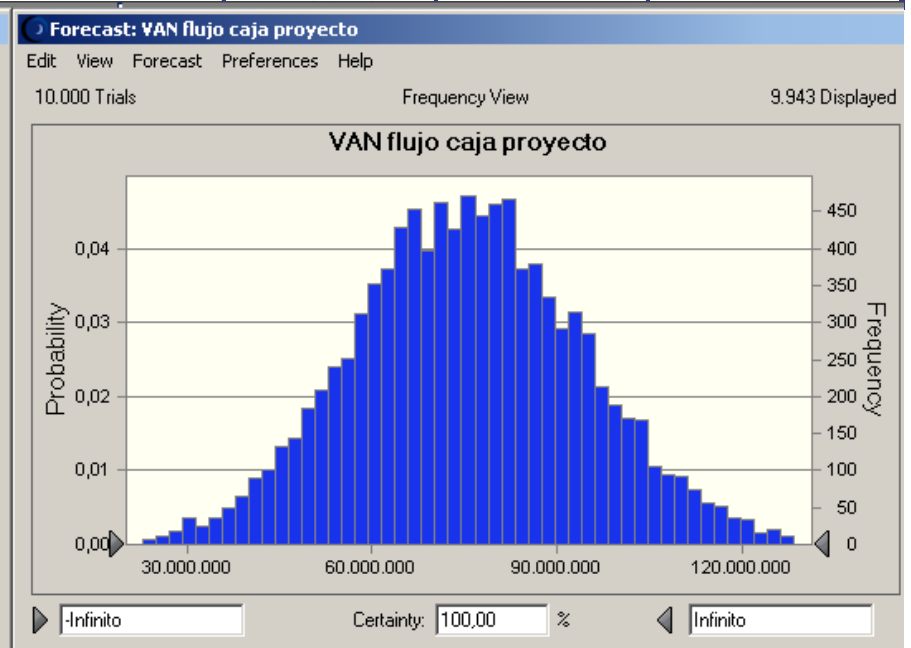
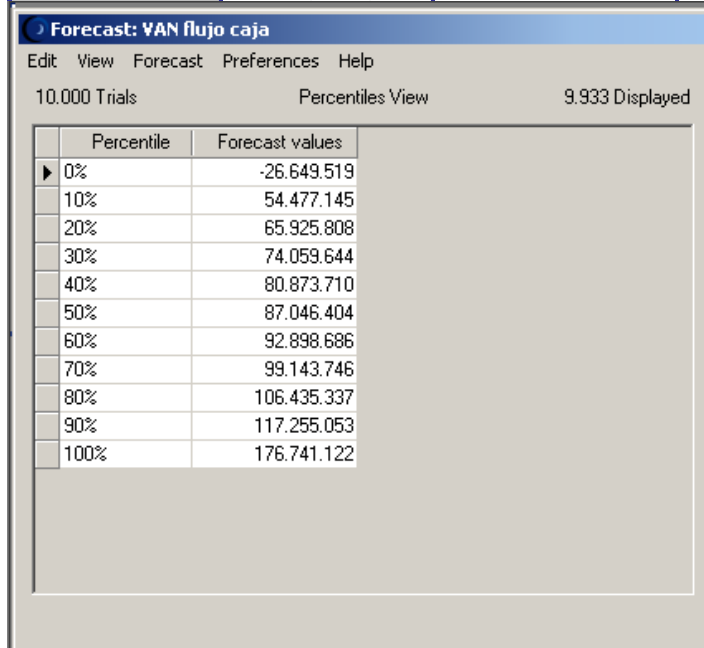
BASE SCENARIO

- ✓ Frequency: 4 departures per week
- ✓ Freight rates: 700 € per full lorry not including a driver
- ✓ Conventional vessel: speed 20 knots; capacity 200 swap bodies; fuel 180 CST
- ✓ Ocean carrier discount rate: 12%

	NPV	IRR	RP
Valenciaport – North of Italy	76,974,109	32.62%	2014

NPV OF CASH FLOW SENSITIVITY TO FREIGHT RATES

Nivel de flete	VAN - flujo de caja	TIR - flujo de caja	Período de recuperación - flujo de caja	VAN - flujo de caja del proyecto	TIR - flujo de caja del proyecto	Período de recuperación - flujo de caja del proyecto
400	47,464,040	28.34%	2014	34,216,479	18.30%	2017
500	76,358,580	36.58%	2013	63,003,562	23.24%	2015
600	86,881,585	38.51%	2012	74,380,041	25.22%	2015
700	76,974,109	32.71%	2013	66,223,179	23.29%	2017
800	41,441,981	21.41%	2016	33,084,799	17.18%	2018
900	-13,968,217	9.59%	---	-19,926,891	9.15%	---
1000	-94,978,912	---	---	-108,131,528	---	---



NPV OF CASH FLOW SENSITIVITY TO THE TYPE OF VESSEL

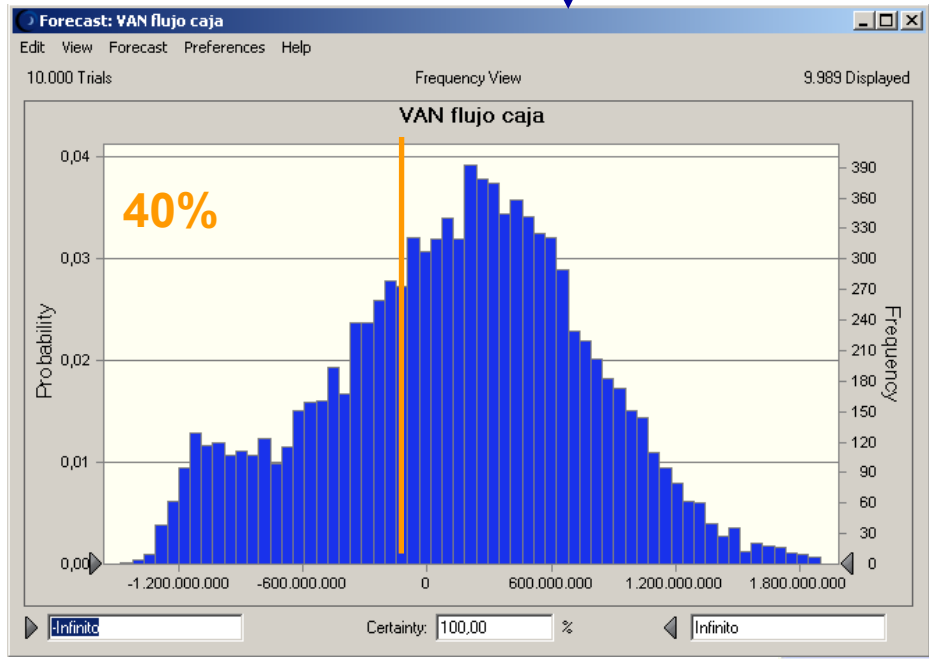
TYPES OF VESSELS	CAPACITY IN S.BODIES	PURCHASING PRICE (EUROS)	SECOND HAND MARKET PRICE AFTER USEFUL LIFE (EUROS)	AVERAGE SERVICE SPEED	CONSUMING (TN/SAILING DAY)	TYPE OF FUEL	FUEL PRICE (EUROS)
VESSEL 1	200	42,000,000	4,200,000	20	50	180CST	490
VESSEL 2	150	52,576,000	5,257,600	25	110	MDO	832
BOULOGNE SUR MER BGV180	81	60,000,000	6,000,000	35	120	MDO	832
BOULOGNE SUR MER BGV180	230	90,000,000	9,000,000	35	120	MDO	832

Note: Fuel price according Fairplay of the 13en of December 2007 for Gibraltar

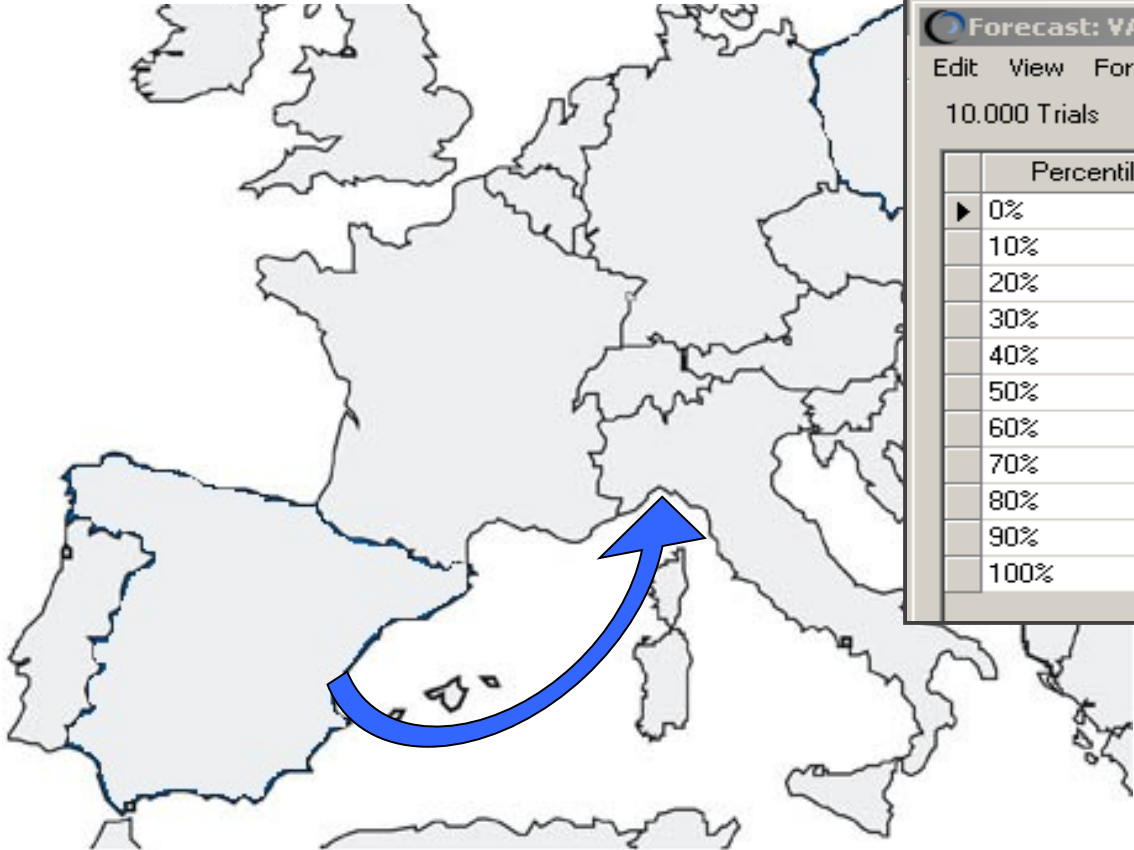
Nivel de flete	BUQUE 1 - VAN - flujo de caja	BUQUE 2 - VAN - flujo de caja	BUQUE 3 - VAN - flujo de caja	BUQUE 4 - VAN - flujo de caja
400	49,125,997	-385,186,251	-831,944,397	-109,099,401
500	77,647,568	-254,547,133	-634,056,904	-25,678,648
600	86,856,244	-147,165,306	-475,466,886	18,157,897
700	78,216,578	-97,947,650	-335,773,828	51,131,794
800	42,669,509	-72,900,055	-221,944,420	48,335,873
900	-13,134,201	-105,431,535	-145,534,572	17,989,383
1000	-108,131,528	-173,494,135	-118,322,758	-37,856,712

NPV OF CASH FLOW SENSITIVITY TO FREIGHT RATES AND FREQUENCY

VAN DEL FLUJO DE CAJA (€)							
Frecuencia / Flete	400	500	600	700	800	900	1000
1 salida semanal	42,517,403	71,168,509	79,069,409	61,728,446	27,436,136	-23,407,381	-52,653,675
2 salidas semanales	44,114,539	69,076,954	85,299,881	71,931,117	36,190,764	-19,705,581	-59,040,276
3 salidas semanales	53,714,662	76,055,093	86,846,516	73,317,815	30,745,618	-39,047,049	-104,988,198
4 salidas semanales	47,464,040	76,358,580	86,881,585	76,974,109	41,441,981	-13,968,217	-94,978,912
5 salidas semanales	39,502,052	74,077,609	81,700,103	68,200,058	32,723,249	-21,491,930	-99,857,046
6 salidas semanales	32,133,018	65,262,825	80,890,843	74,048,038	49,705,381	-5,411,410	-89,502,730
7 salidas semanales	17,320,363	53,972,039	67,970,567	70,315,389	47,713,480	1,510,812	-70,264,678
2 salidas diarias	-87,896,875	-12,629,714	34,805,157	59,166,454	62,095,076	47,753,447	10,684,407
3 salidas diarias	-205,445,177	-97,309,804	-12,373,506	42,340,941	76,472,873	93,334,663	87,981,957
4 salidas diarias	-328,191,349	-185,807,249	-67,942,635	26,379,689	90,849,670	136,440,763	161,927,065



NPV OF CASH FLOW TAKING INTO ACCOUNT THE MOST PROFITABLE SERVICE COMBINATION



Forecast: VAN flujo caja Norte

Edit View Forecast Preferences Help

10.000 Trials Percentile:

Percentile	Forecast values
0%	-13.352.462
10%	54.423.870
20%	66.373.841
30%	74.517.394
40%	80.904.405
50%	86.773.635
60%	92.582.932
70%	98.959.638
80%	106.496.717
90%	116.681.104
100%	179.126.944

SERVICE LEVEL	DISCOUNT RATE	VESSEL SPEED	VESSEL CAPACITY	FREIGHT RATES	FUEL	FREQUENCY (x week)
Valenciaport - North of Italy	12%	20 Kn.	200 s.b.	600 €	180 CST	4

ROAD TRANSPORT COMPANY FINANCIAL ANALYSIS

Three programmes were designed covering three types of operative:

- A trucking company using MoS loading on vessel only the swap body (no swap body nor driver on-board) - **Non-accompanied transport**
- A trucking company using MoS loading the tractor unit, swap body and driver - **Accompanied transport**
- A trucking company offering road-only transport services



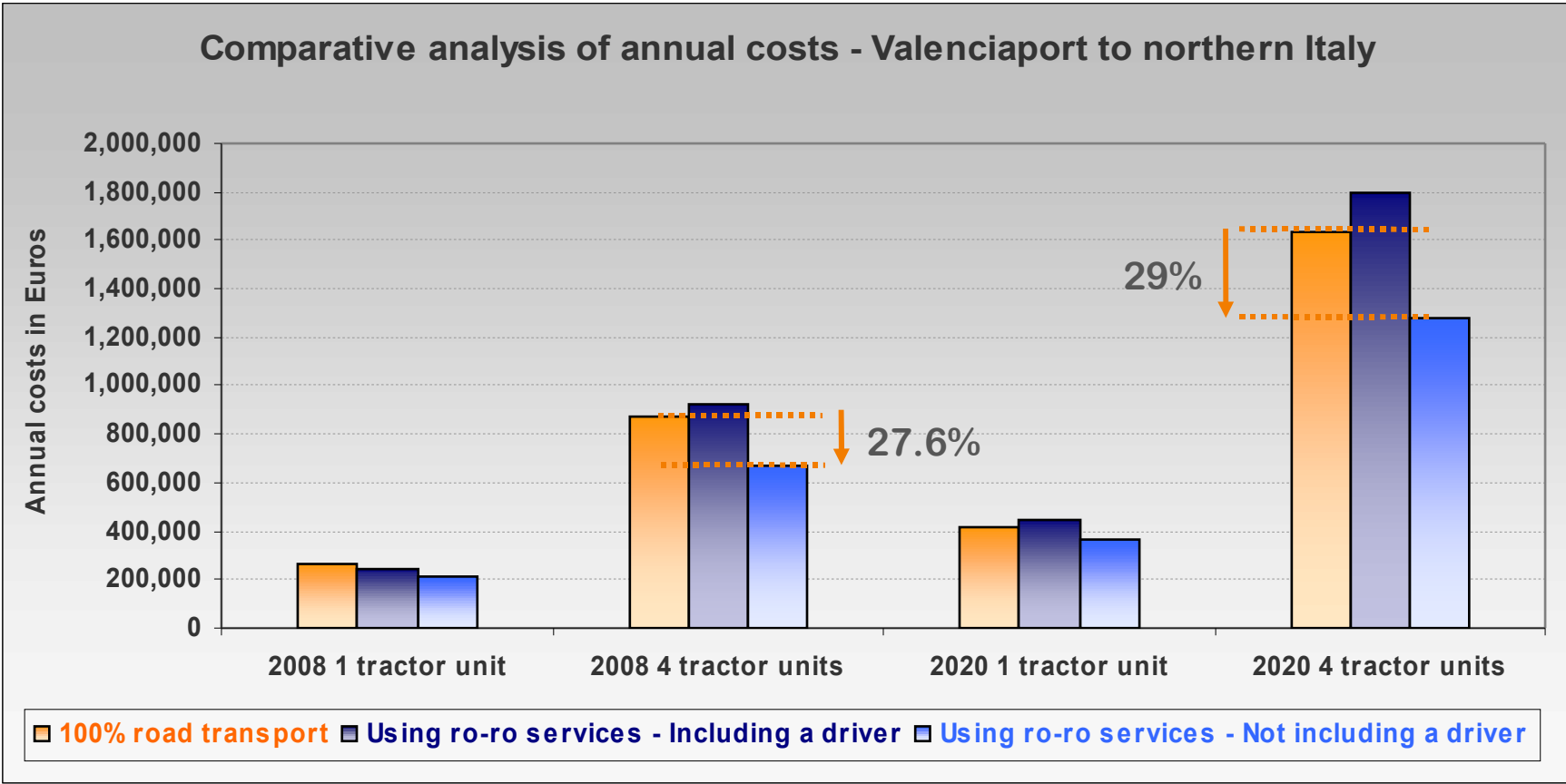
Comparative analysis of the expected financial results for each type of operation

Particular attention was paid to modifying the programme to account for any **size of trucking company**.

A comparative analysis of results has been carried out for four different companies according to their size:

- ✓ **Owner-operator**: large presence of one-employee / one-vehicle companies offering their services to freight forwarding agencies and to larger trucking companies
- ✓ **4 tractor units**: average size of the Spanish trucking company providing international road transport services between 3 and 4 vehicles
- ✓ **15 tractor units**: estimated by the Spanish Ministry for Public Works the minimum size for a trucking company to benefit from economies of scale and be competitive in the European market
- ✓ **150 tractor units**: as an example of large company that would enable us to analyse the magnitude of potential economies of scale

Comparison of total annual costs - Valenciaport to northern Italy



BASE SCENARIO

- ✓ 4 tractor units
- ✓ Freight rates: 700 € per full lorry not including a driver
- ✓ Average service price: 1€/Km
- ✓ Haulier discount rate: 9%

	NPV	IRR	RP
Valenciaport – North of Italy	663,303	88.6%	2010

Sensitivity analysis to the transport service price - Valenciaport to northern Italy

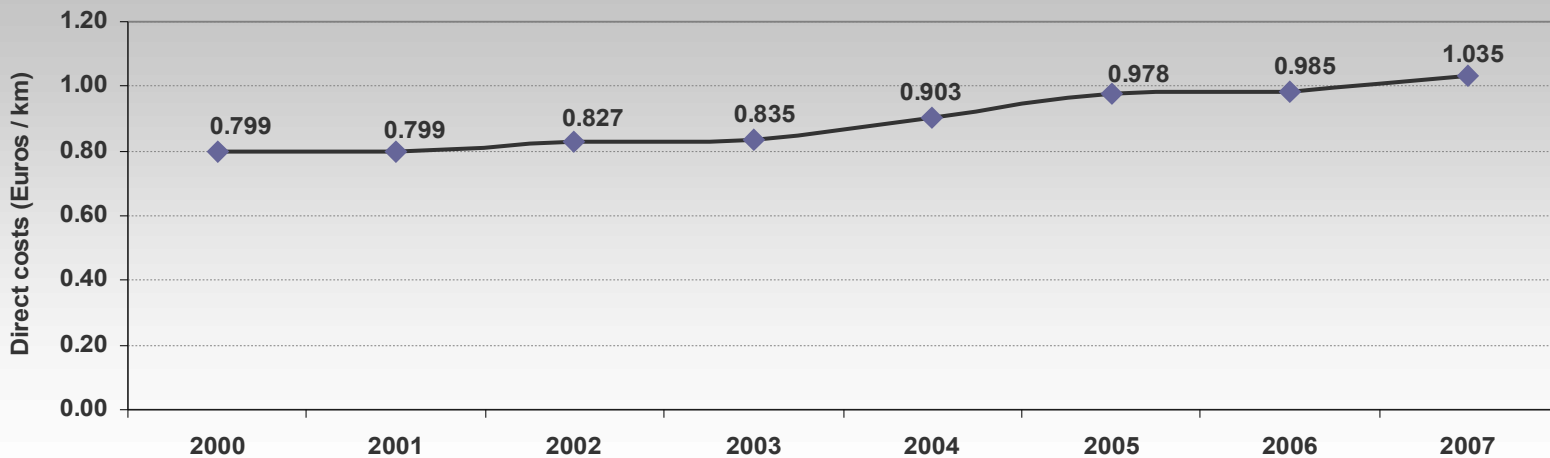
FINANCIAL RESULTS BASED ON PROJECT CASH FLOW FORECAST - COMPANY WITH 4 TRACTOR UNITS - 100% ROAD TRANSPORT

Average service price (Euros / km)	NPV	IRR	Break-even point
0.85	---	---	---
0.9	---	---	---
0.95	---	---	---
1	---	---	---
1.05	75,288	11.77%	2020
1.1	386,847	23.20%	2013

FINANCIAL RESULTS BASED ON PROJECT CASH FLOW FORECAST - COMPANY WITH 4 TRACTOR UNITS - USING RO-RO SERVICES, NOT INC. DRIVER NOR TRACTOR UNIT

Average service price (Euros / km)	NPV	IRR	Break-even point
0.85	---	---	---
0.9	-75,280	4.45%	2014
0.95	192,111	20.06%	2012
1	451,937	34.60%	2011
1.05	711,762	50.21%	2010
1.1	971,588	68.28%	2010

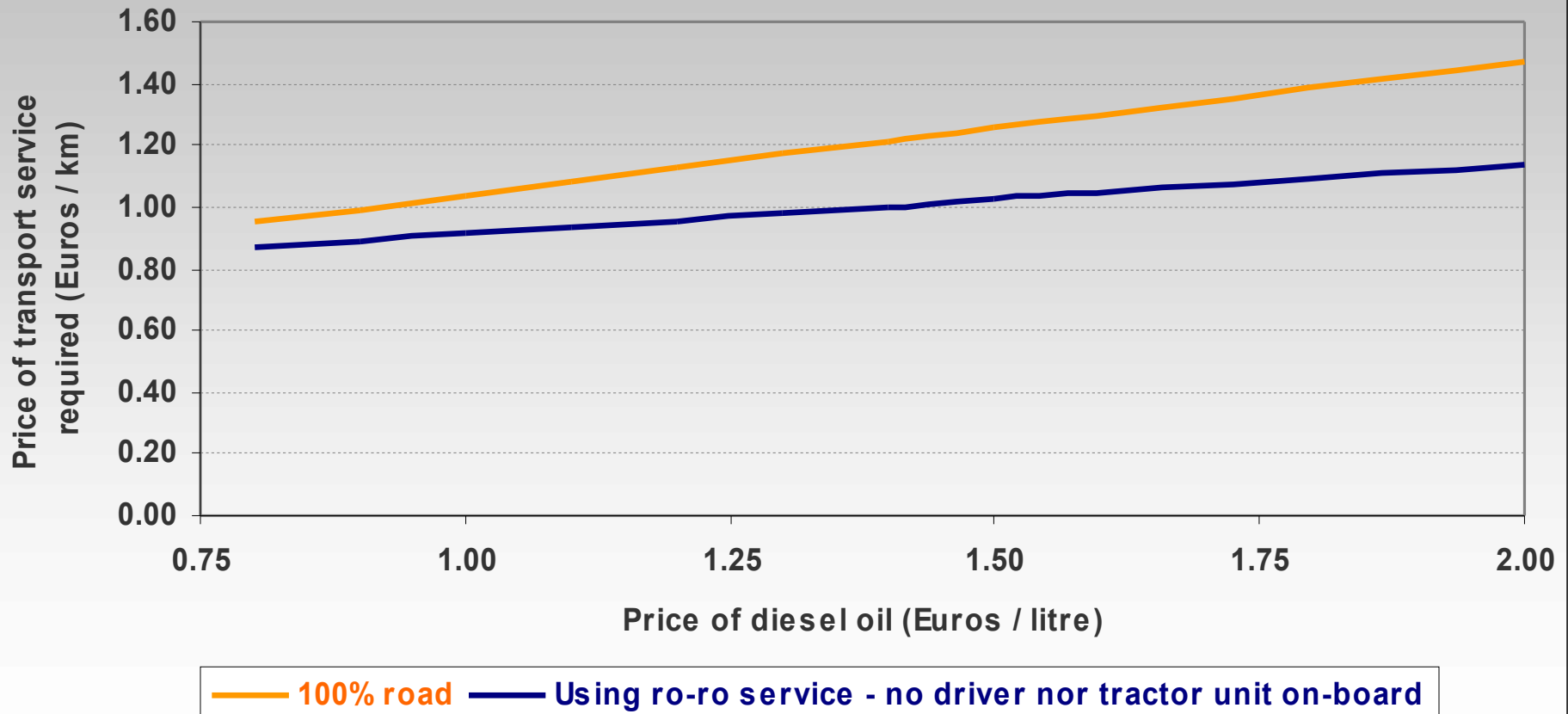
Evolution of direct costs per vehicle for the average Spanish trucking company



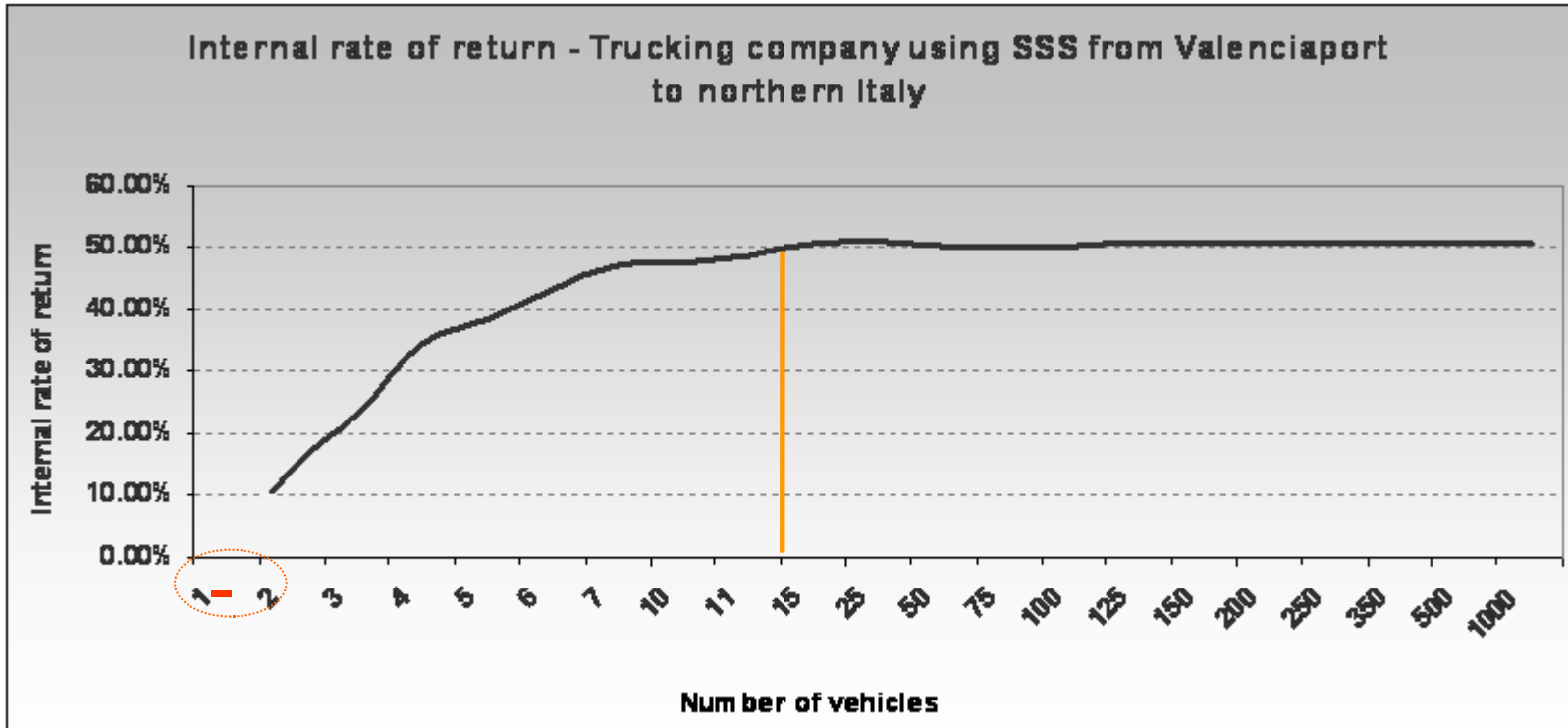
Fuente: Elaboración propia en base a datos del Observatorio de mercado del transporte de mercancías por carretera. N° 14. Abril 2008. Ministerio de Fomento.

Sensitivity analysis to the transport service price - Valenciaport to northern Italy

Sensitivity to price of diesel - Price of transport service required for NPV = 0



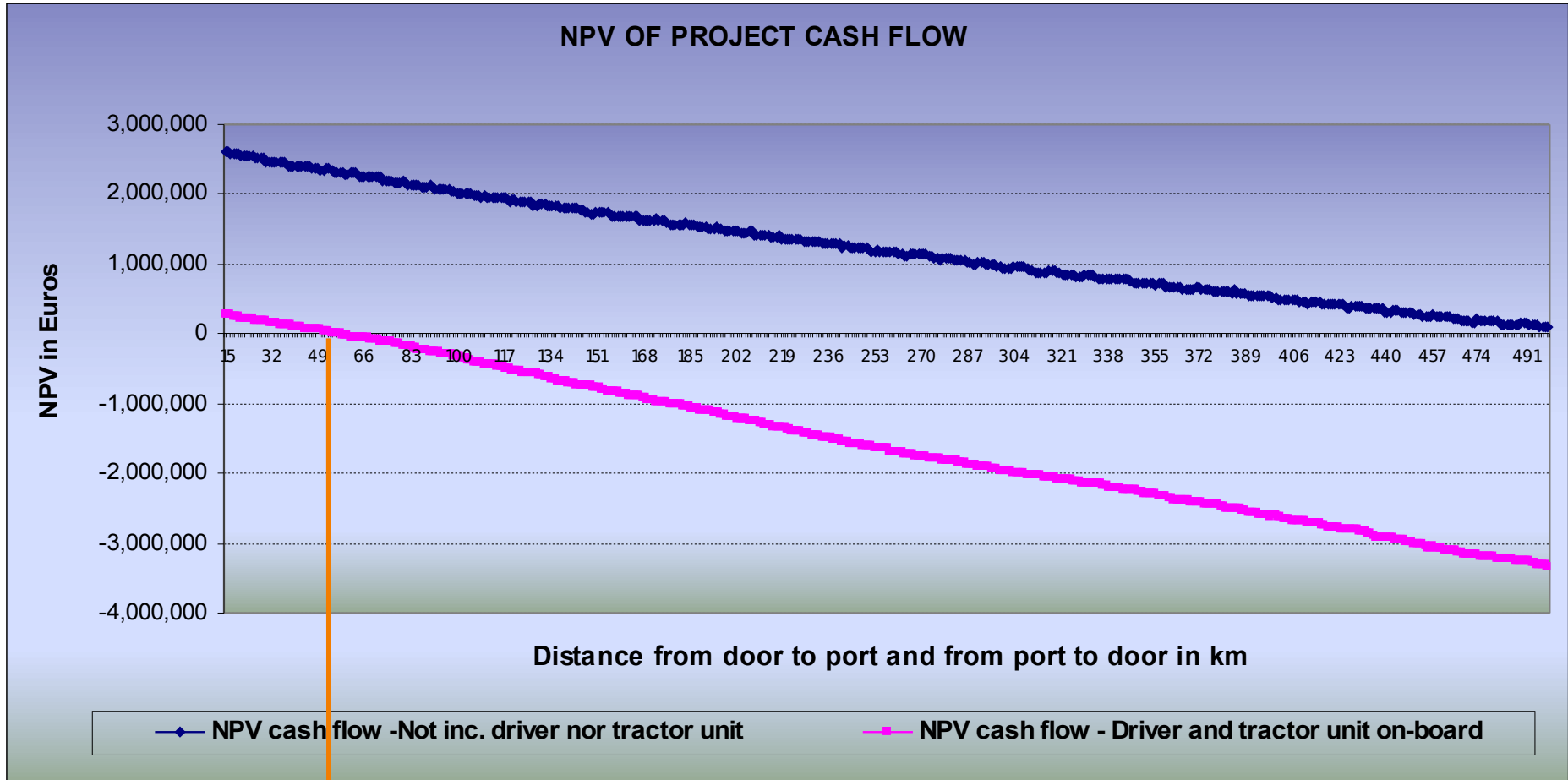
Economies of scale due to company size



IRR calculated for a trucking company offering door to door transport services under the following circumstances:

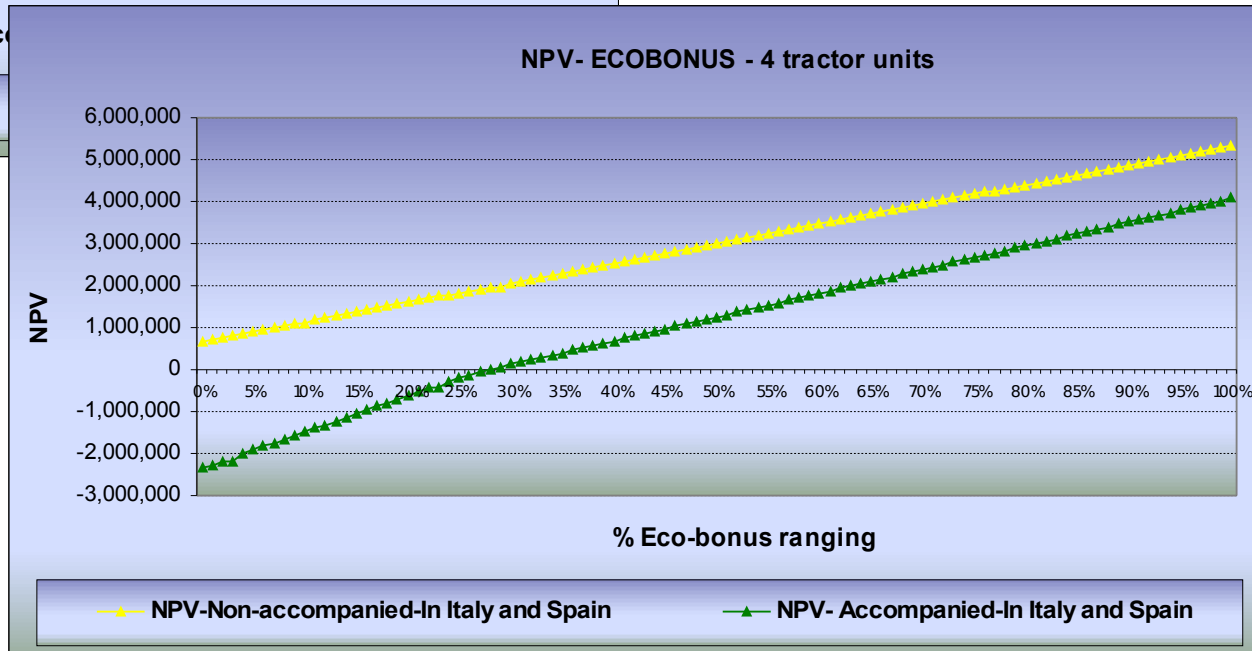
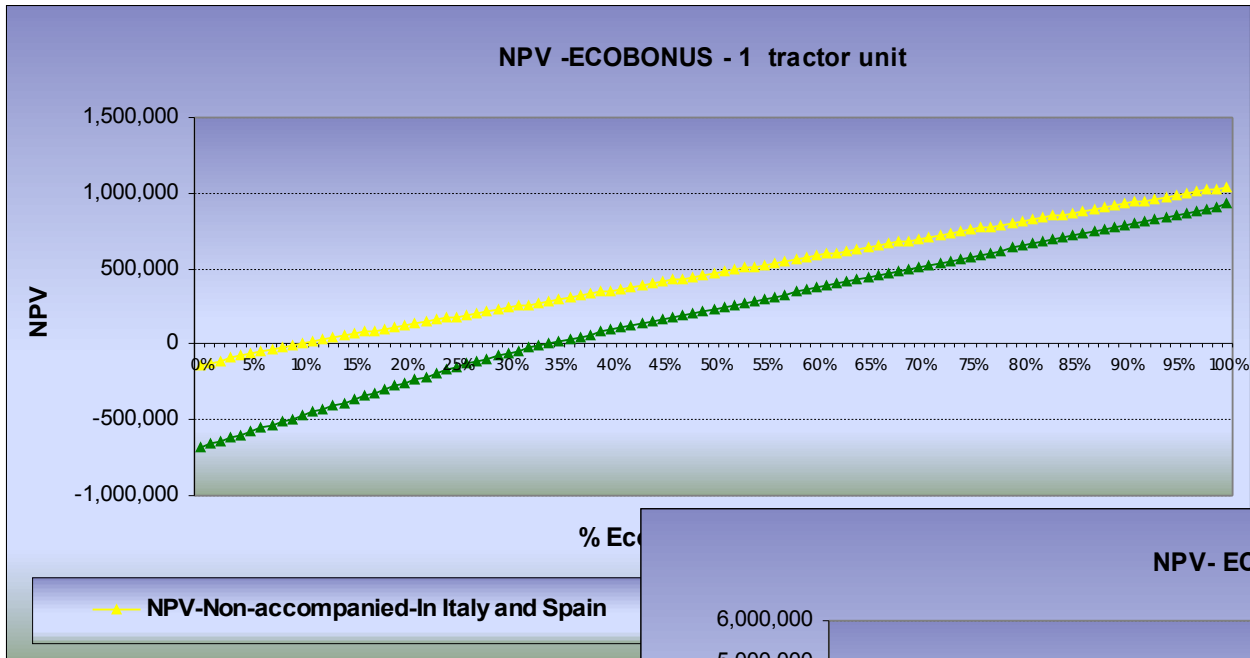
- Freight rate: 700 Euros
- Company uses SSS between Valenciaport and northern Italy not boarding driver nor tractor unit
- Transport service price: 1 Euro / km

Sensitivity analysis to the distance from door to port - Valenciaport to northern Italy



If pick-up and delivery point are more than 47 km away from port - project not profitable

Sensitivity analysis to the ecobonus - Valenciaport to northern Italy



CONCLUSIONS

- ✓ A level of service of 4 departures per week and a freight rate of 600€ would maximise the shipping line's NPV
- ✓ Trucking companies operating using MoS between Valenciaport and the north of Italy under a non-accompanied scheme would be less sensitive to increases in diesel price than companies operating road-only services
- ✓ There are large economies of scale on the size of the fleet
- ✓ Launching an incentive scheme similar to the Italian ecobonus in Spain would increase the attractiveness of using MoS for trucking companies
- ✓ A Spanish and Italian ecobonus of 27% of the freight rate would imply obtaining a positive project NPV for 4-vehicle companies loading swap-body, tractor unit and driver on the vessel

THANK YOU FOR YOUR ATTENTION!



Project co-financed by the European Union from the Trans-European Networks (TEN) - area of transport infrastructures (TEN-T) budget. Directorate General for Energy & Transport. European Commission.





Ministero delle Infrastrutture e dei Trasporti

Project co-financed by the European Union from the trans-European transport networks budget (TEN-T)



Proyecto cofinanciado por la Unión Europea con cargo al presupuesto de las redes transeuropeas (RTE-T)

Projet cofinancé par l'Union européenne sur le budget des Réseaux Transeuropéens (RTE-T)

Progetto cofinanziato dall'Unione europea con i fondi del bilancio destinato alle reti transeuropee (RTE-T)

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